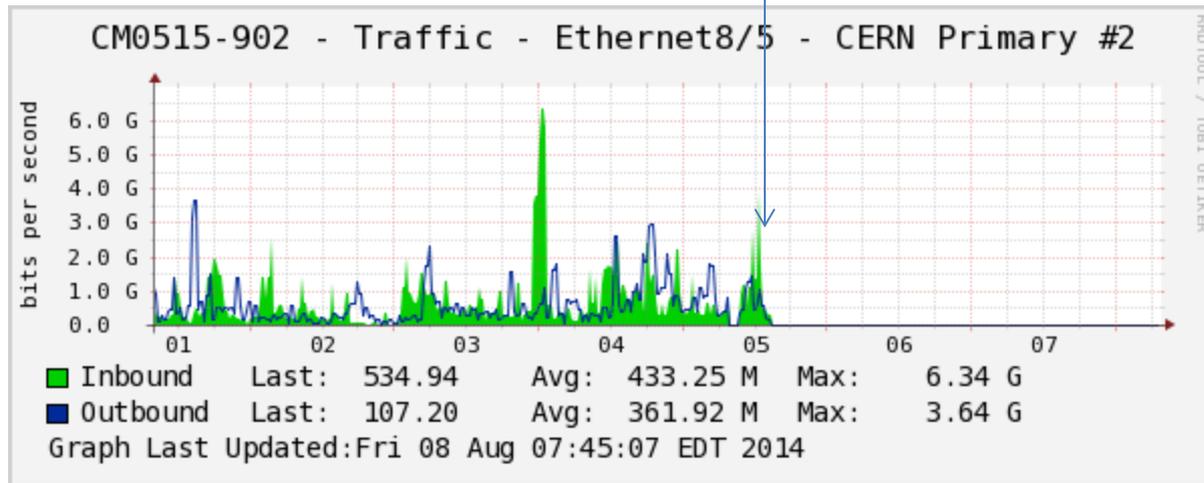


Test BNL T1 ↔ CERN & EU/CA-T1 connectivity via LHCONE under production conditions

BNL switched off OPN circuits on Aug 5 at ~8 AM ...



... To verify

- Automatic “failover” from OPN to LHCONE infrastructure (PBR based)
- That operations based on LHCONE bandwidth and stability is feasible

Network routes while OPN circuits=off

BNL to CERN

tracpath eosatlasftp.cern.ch

- 1: dcdoor10.usatlas.bnl.gov (192.12.15.231) 0.121ms pmtu 1500
- 1: cm0515-902.usatlas.bnl.gov (192.12.15.224) 0.490ms
- 1: cm0515-902.usatlas.bnl.gov (192.12.15.224) 0.374ms
- 2: 10.224.2.5 (10.224.2.5) 0.347ms
- 3: esnet-lhc1-100-bnl.es.net (198.124.80.37) 2.590ms
- 4: lhc1-ana100-cern.es.net (198.124.80.130) 93.488ms
- 5: l513-e-rbrml-1-oe5.cern.ch (192.65.183.10) 93.563ms

ANA-100 is used

BNL to IN2P3/Lyon

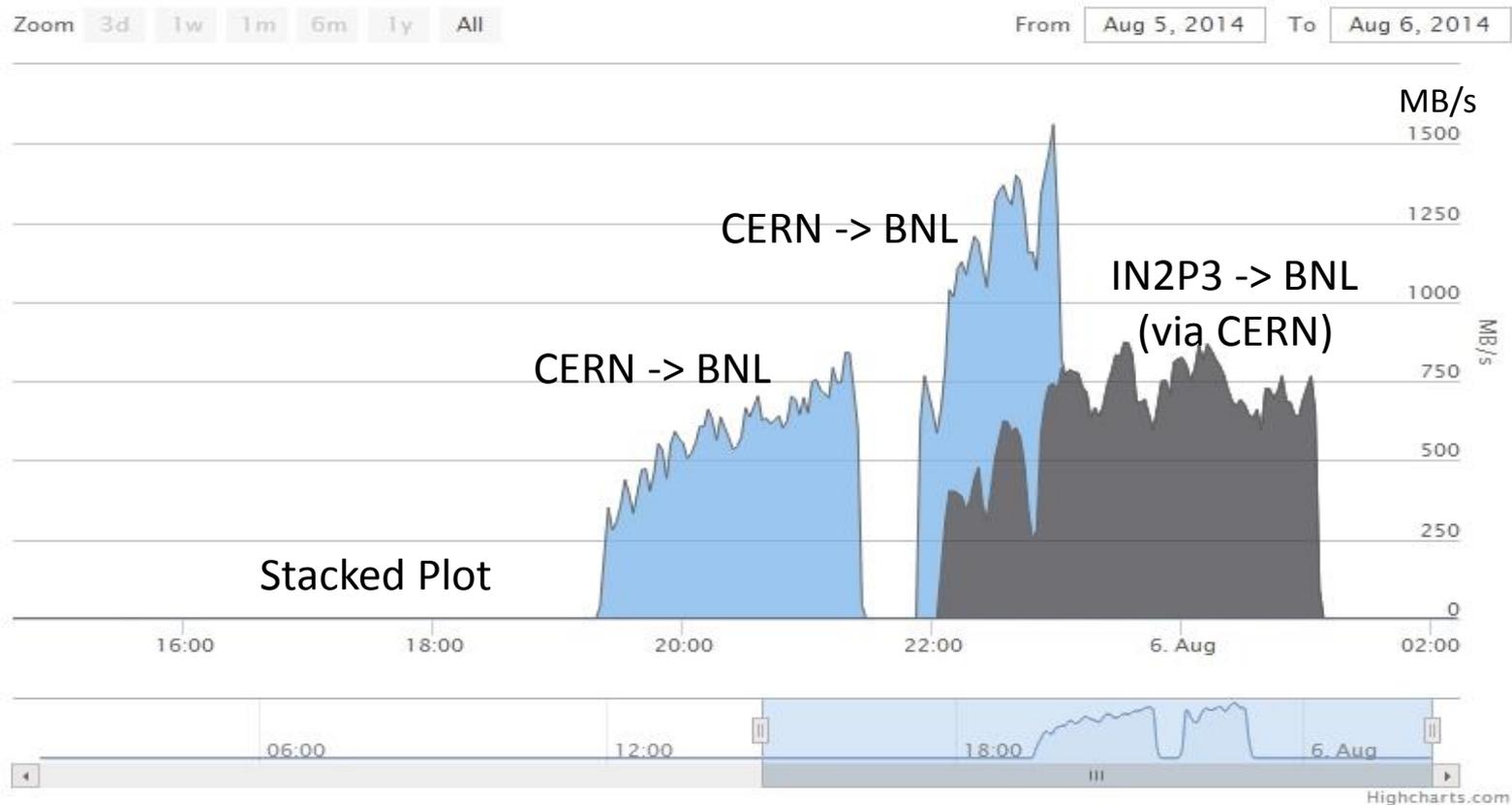
tracpath ccdcatli160.in2p3.fr

- 1: dcdoor10.usatlas.bnl.gov (192.12.15.231) 0.165ms pmtu 1500
- 1: cm0515-902.usatlas.bnl.gov (192.12.15.224) 0.518ms
- 1: cm0515-902.usatlas.bnl.gov (192.12.15.224) 0.819ms
- 2: 10.224.2.5 (10.224.2.5) 0.326ms
- 3: esnet-lhc1-100-bnl.es.net (198.124.80.37) 2.905ms
- 4: lhc1-ana100-geant.es.net (198.124.80.132) 77.191ms
- 5: ae0.mx1.fra.de.geant.net (62.40.98.128) 92.732ms asymm 8
- 6: geant-lhccone-gw.mx1.gen.ch.geant.net (62.40.126.217) 92.798ms
- 7: renater-lhccone-gw.gen.ch.geant.net (62.40.126.222) 94.863ms
- 8: in2p3-lyon-vl3121-te3-1-lyon1-swi-001.noc.renater.fr (193.51.191.49) 94.745ms
- 9: Lyon-OPN.in2p3.fr (192.70.69.130) 95.350ms asymm 8
- 10: Lyon-OPN.in2p3.fr (192.70.69.130) 95.582ms !H Resume: pmtu 1500

ANA-100/GEANT is used

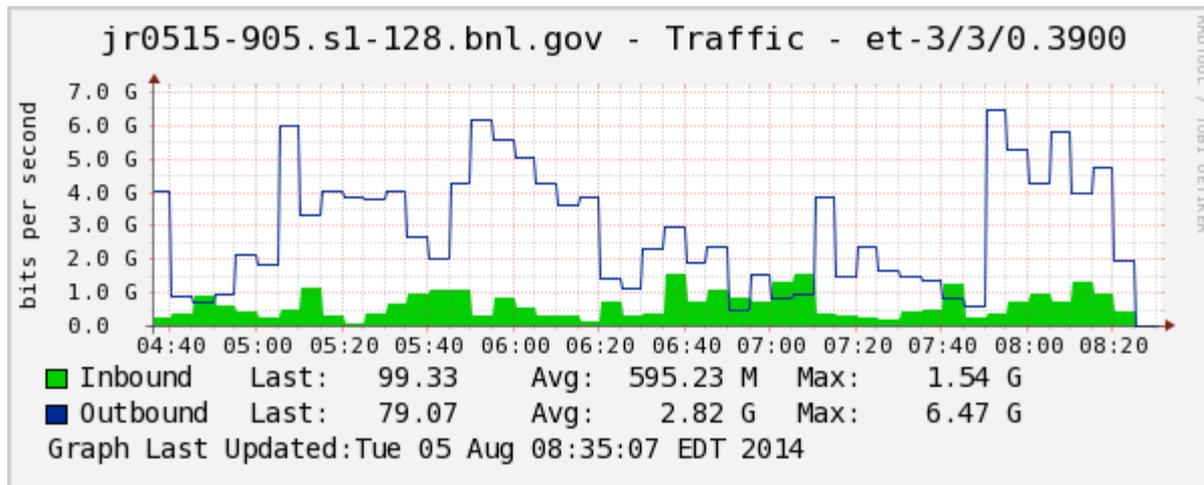
Data Ingest to BNL from CERN and IN2P3 w/ CERN connectivity via LHCONE

- Load injected by DDM subscriptions of datasets at CERN and IN2P3

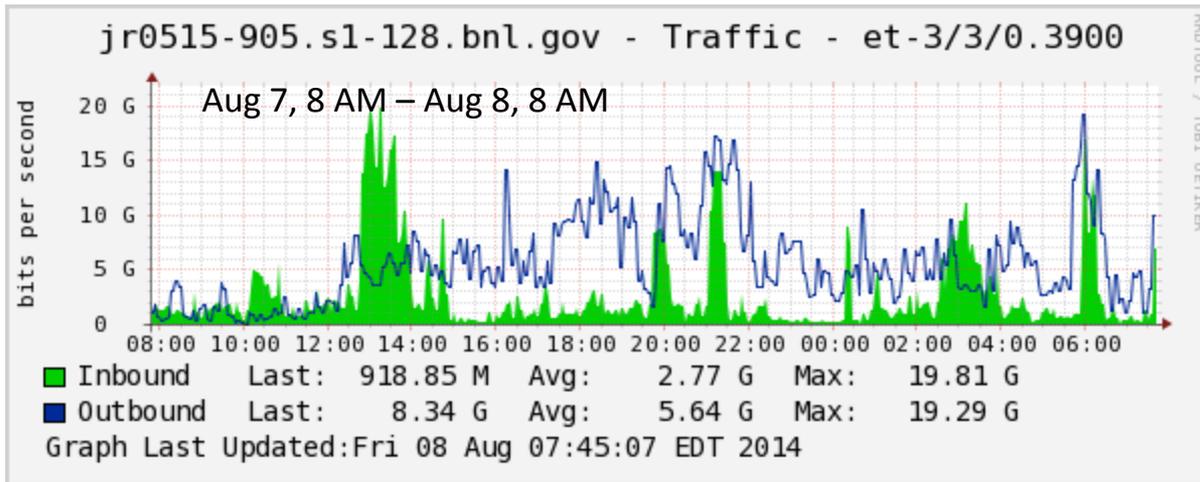
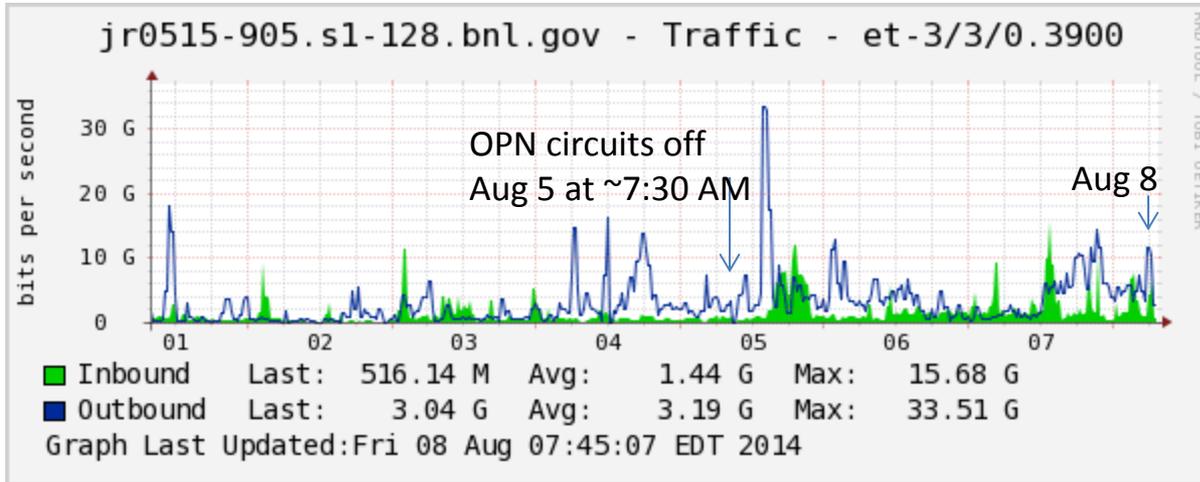


BNL T1 Traffic to/from LHCONE (with LHCOPN circuits=off)

OPN circuits were switched off



LHCONE utilization while OPN circuits were Off



Conclusion

- The BNL T1 has been running under production conditions for 3 consecutive days on LHCONE w/o the OPN circuits
 - No problems/disruptions were encountered
 - No bottlenecks or delays in replication observed
 - PBR setup at BNL is working perfectly
 - Automatically switched BNL T1 ↔ CERN and BNL T1 ↔ non-US T1 traffic to LHCONE circuit
- Caveat: We have been using the ANA-100 link
 - What will the conditions be if that link is not available?